

Adherence to the Mediterranean diet among patients with acute cardiovascular events admitted to Cardiac Rehabilitation Unit

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Abstract

The Mediterranean Diet plays a critical role in the prevention of primary cardiovascular disease (CVD). Actually, there is a scarcity of evidence for secondary prevention. The current study aims to assess adherence to the Mediterranean diet (MD) in patients recently admitted to the Cardiac Rehabilitation Unit following acute cardiovascular disease. Adherence to MD was assessed in 111 patients admitted to the Cardiac Rehabilitation Unit of the Federico II University Hospital in Naples. The Medi-Lite score was used to

assess adherence to MD. The main determinant of reduced MD compliance was assessed using Pearson's correlation analysis and a multivariable regression model. The population had a median MD adherence score of 11 and a mean score of 10.9. The lowest possible score was 5 (indicating poor adherence), and the highest possible score was 15 (excellent adherence index). There were 3 participants with a poor score (<7), 82 with a good score (7-12), and 26 with an excellent score (>12). Lower Medi-Lite score was associated with younger age and being an active worker in a multivariate regression model (both $p < 0.05$). Our findings show that among patients admitted to the Cardiac Rehabilitation Unit after a major CV event, young active workers have the lowest adherence to MD, requiring an individualized and multidisciplinary approach to improve their adherence to MD for secondary CV prevention.

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Introduction

A healthy, natural, and balanced diet that adheres to the Mediterranean diet (MD) principles has been shown in prior studies to be effective in reducing obesity and the risk of developing cardiovascular (CV) diseases. According to the Lyon Diet Heart Study, which was first published in 1993, the MD group experienced a 73% decrease in cardiovascular mortality and a 70% decrease in all-cause mortality [1]. In more recent studies, the value of MD has been established, particularly with regard to primary cardiovascular prevention [2,3].

Through the validated Mediterranean diet literature-based adherence score (MEDI-Lite), the current study aims to evaluate adherence to the MD in patients who have recently been admitted to the Cardiac Rehabilitation Unit after acute cardiovascular disease.

Methods

The Medi-Lite adherence score

The Medi-Lite score is a tool for assessing adherence to MD [4]. The score is comprised of nine items that assess daily or weekly intake, portion size (small, medium, large), and frequency of consumption (by selecting an option ranging from 0 to 6 or more times per day/week). Fruit (both large and small in size), vegetables (both cooked and uncooked), some cereals (first course, bread, biscuits, breakfast cereals), some dairy products (milk, yoghurt), and alcohol (expressed in alcoholic units) are all considered acceptable daily foods. Pizza, meat (white and red meat, as well as cold cuts), fish, and some dairy products (fresh and seasoned cheese) are all considered weekly staples. Finally, it is inquired whether olive oil is used on an irregular, frequent, or regular basis.

The highest category of consumption for the food groups

typical to the MD (fruit, vegetables, cereals, legumes, and fish) was given a value of 2, the middle category received a value of 1, and the lowest category received a value of 0. For food groups that are not typical of the MD, such as meat and meat products and dairy products, a value of 2 was given to the lowest category, a value of 1 to the middle category, and a value of 0 to the highest consumption category. In terms of alcohol consumption, the middle category received two points, the lowest category received one, and the highest category received zero. The final scoring system assigned 2 points for consistent use of olive oil, 1 for frequent use, and 0 for infrequent use.

Combining the partial scores of the various food groups yields the final score. Poor adherence to MD (0–6), good adherence (7–12), and excellent adherence are all potential outcomes (13–18).

Data collection

The information was gathered following the submission of the Medi-Lite survey, which is available for free on the website <https://www.medi-lite.com/medilite>. In addition to the information provided on the questionnaire regarding nutrition, gender, age, education level, and marital status, information was gathered regarding the job type, the reason for admission, weight and height measurements (used to calculate BMI), and CV risk factors such as hypertension, dyslipidemia, diabetes mellitus type 2, obesity, and tobacco use (Table 1). The Data Protection Act and the Helsinki Declaration's principles were followed in the study. All participants in the study provided their informed consent.

Statistical analysis

The data collected were reported in Excel and processed by IBM SPSS Statistics. Results were expressed as mean or median

and min-max range, as appropriate. The population has been divided into elderly subjects (age[≥]65) and non-elderly subjects (age<65). Marital status was recategorized as unmarried/single and married/partner, and education level was recategorized as primary/secondary school, high school and university. Person's correlation analysis and multivariable regression model were used to assess the main determinant of reduced adherence to MD. A p-value <0.05 was considered statistically significant.

Results

Study population

The data refer to the hospitalizations in the Cardiac Rehabilitation Unit of the Federico II Hospital of Naples from December 2020 until May 2022. In total, 111 questionnaires were included in the analysis (35 women and 76 men). Mean score was 10.9±2.1 with a normal distribution (Figure 1).

Characteristics influencing adherence to the score

We studied the characteristics that may influence adherence to the score. We demonstrated the existence of a significant correlation with age, education and job (Table 2, p<0.05). No significant differences were found between men and women, subjects hospitalized with acute coronary syndrome STEMI and NSTEMI or heart failure. Significant differences were observed between elderly and non-elderly subjects and between retirees compared to no direct influence of MD score was found on prevalent CV risk factors in active workers (both p<0.05). In multivariable regression model including age and job being an active worker is the only significant variable associated with lower adherence to MD ($\beta=0.261$, p=0.037).

Table 1. Socio-demographic characteristics and the risk factors of the subjects who completed the questionnaire, according to sex.

Characteristics	All (n=111)	Males (n=76)	Females (n=35)
Marital status			
Unmarried/single, n (%)	36 (32.4)	21 (27.6)	15 (42.9)
Married/partner, n (%)	75 (67.6)	55 (72.4)	20 (57.1)
Education level			
Primary/secondary school, n (%)	81 (73.0)	51 (67.1)	30 (85.7)
High school, n (%)	22 (19.8)	18 (23.7)	4 (11.4)
University, n (%)	8 (7.2)	7 (9.2)	1 (2.9)
Job			
Workers, n (%)	20 (18.0)	19 (25.0)	1 (2.9)
Unemployed/housewives, n (%)	24 (21.6)	10 (13.2)	14 (40.0)
Retirees, n (%)	67 (60.4)	47 (61.8)	20 (57.1)
Risk factors			
Not obese, n (%)	80 (72.1)	59 (77.6)	21 (60.0)
Obese, n (%)	31 (27.9)	17 (22.4)	14 (40.0)
Not smoker, n (%)	46 (41.44)	24 (31.6)	22 (62.86)
Smoker, n (%)	24 (21.62)	21 (27.6)	3 (8.57)
Ex-smoker, n (%)	41 (36.94)	31 (40.8)	10 (28.57)
Detraining, n (%)	94 (84.7)	62 (81.6)	32 (91.4)
Not detraining, n (%)	17 (15.3)	14 (18.4)	3 (8.6)
Not hypertensive, n (%)	42 (37.8)	32 (42.1)	10 (28.6)
Hypertensive, n (%)	69 (62.2)	44 (57.9)	25 (71.4)
Not diabetic, n (%)	66 (59.5)	47 (61.8)	19 (54.3)
Diabetic, n (%)	45 (40.5)	29 (38.2)	16 (45.7)
Not dyslipidemic, n (%)	47 (42.3)	35 (46.1)	12 (34.3)
Dyslipidemic, n (%)	64 (57.7)	41 (53.9)	23 (65.7)

Discussion

In this study, we examined a group of patients admitted to the Cardiac Rehabilitation Unit who completed the Medi-Lite questionnaire regarding their adherence to the MD. Our findings revealed that the median level of adherence to the MD was 11 points overall, which indicates a good median level of adherence in the population under study. Despite this, a prior study [5] found that patients in cardiac rehabilitation units had low awareness of CV risk factors. Younger age and employment were linked to lower Medi-Lite scores. By using this information, clinicians may be able to target specialized nutritionist consultation to this particular group of patients. Previous research has shown that following the Mediterranean diet can have a positive effect on secondary prevention, as well as a protective effect on the risk of

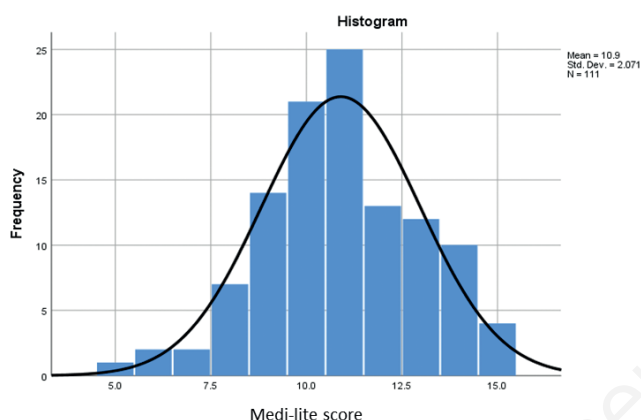


Figure 1. Medi-Lite score of the study population.

first ST-elevation myocardial infarction [6,7]. Younger age has already been linked to lower adherence to MD in the general population, underscoring the need for a focused education program to help people improve their diet in order to achieve higher adherence scores to the MD [8]. In previous studies involving primarily young subjects, low adherence to MD has been linked to more prevalent CV risk factors, such as diabetes, dyslipidemia, and hypertension [9]. The relatively older age of the participants in our study and the small sample size both contributed to the lack of this association.

This study has some limitations and strengths. One of the drawbacks is the small and carefully chosen sample size of our cross-sectional study. As for the advantages, we can point to the use of a validated questionnaire that was personally distributed. As a result, we were able to avoid recall bias, which could have led to inaccurate exposure classification.

Conclusions

In conclusion, the current survey-based study discovered that patients admitted to a Cardiac Rehabilitation Unit after an acute cardiovascular event adhered to the Mediterranean diet well. According to our findings, being a young, active worker is associated with lower adherence to the MD. According to the findings, this subgroup of patients required a targeted educational program to increase adherence to MD.

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Table 2. MD adherence scores in relation to the variables examined.

	n	Mean	Minimum	Maximum	p-value
Gender					0.153
Males	76	11.09	5	15	
Females	35	10.48	6	15	
Age					0.04
Elderly subjects	74	11.16	6	15	
Non-elderly subjects	37	10.37	5	14	
Education level					0.08
Primary/secondary school	81	10.70	5	15	
High school	22	11.77	8	15	
University	8	10.5	8	13	
Job					0.037
Workers	20	10	5	13	
Unemployed/housewives	24	10.45	6	14	
Retirees	67	11.32	6	15	
BMI					0.755
Not obese	80	10.86	5	15	
Obese	31	11	8	15	
Diagnosis					0.221
SCA STEMI	49	11.26	5	14	
SCA NSTEMI	13	10.46	8	14	
Heart failure	9	11.44	9	15	
Other	40	10.47	6	15	

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